UVA COVID-19 MODEL WEEKLY UPDATE

February 5, 2021

KEY TAKEAWAYS

- Virginia's average daily cases remains very high. Nevertheless cases continue to decline statewide. 29 of 35 Virginia Health Districts are in declining trajectories, and only one (Loudoun) is in a surge trajectory.
- Variants of Concern (VoCs) continue to be identified nationally and in Virginia. Four cases of the B.1.1.7 VoC have been identified in Virginia, including 3 in Northern Virginia and 1 in Northwest Virginia.
- Prevention and mitigation strategies may successfully contain VoCs. However, if coupled with reduced prevention effort, VoCs could lead to high transmission and extend the worst impacts of the pandemic.

56 per 100k

Average Daily Cases
Week Ending Jan 31, 2021

111 per 100k

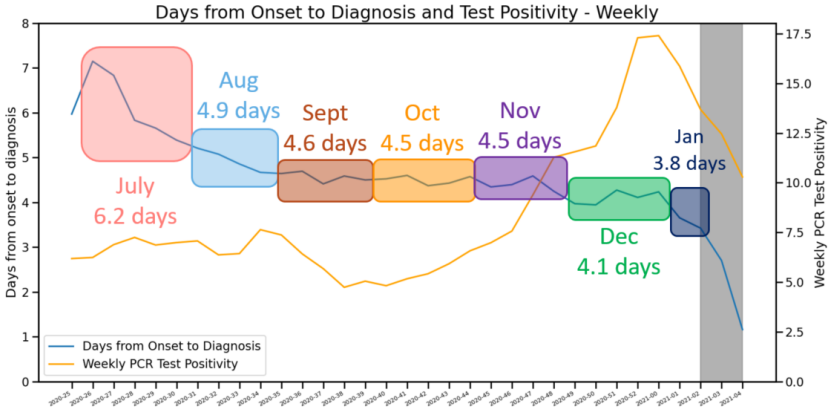
Peak Average Daily Cases
Week Ending May 09, 2021
New Variants & Pandemic Fatigue - Projection

KEY FIGURES

Reproduction Rate
(Based on Confirmation Date)

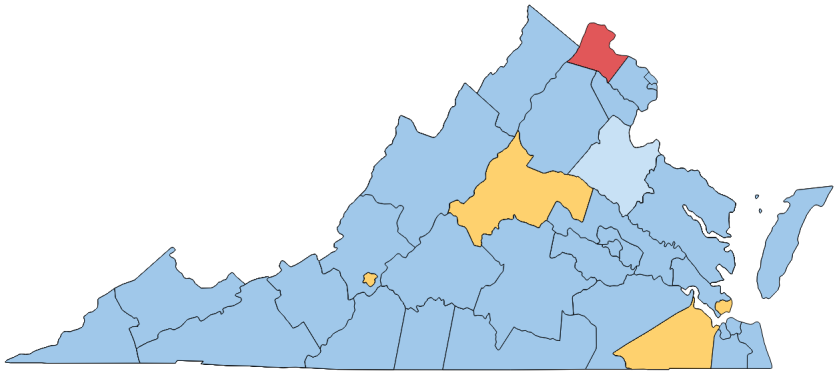
Region	R_e Feb 1	Weekly Change
State-wide	**0.942**	**0.133**
Central	0.964	0.144
Eastern	0.866	-0.076
Far SW	0.821	0.123
Near SW	0.952	0.206
Northern	1.024	0.315
Northwest	0.899	-0.011

Case Detection



Growth Trajectories: 1 Health District in Surge

Status	# Districts (prev week)
Declining	29 (20)
Plateau	1 (2)
Slow Growth	4 (7)
In Surge	1 (6)



UNIVERSITY of VIRGINIA
BIOCOMPLEXITY INSTITUTE

UVA COVID-19 MODEL WEEKLY UPDATE

VDH VIRGINIA DEPARTMENT OF HEALTH

THE MODEL

The UVA COVID-19 Model and the weekly results are provided by the UVA Biocomplexity Institute, which has over 20 years of experience crafting and analyzing infectious disease models. It is a (S)usceptible, (E)xposed, (I)nfected, (R)ecovered epidemiologic model designed to evaluate policy options and provide projections of future cases based on the current course of the pandemic.

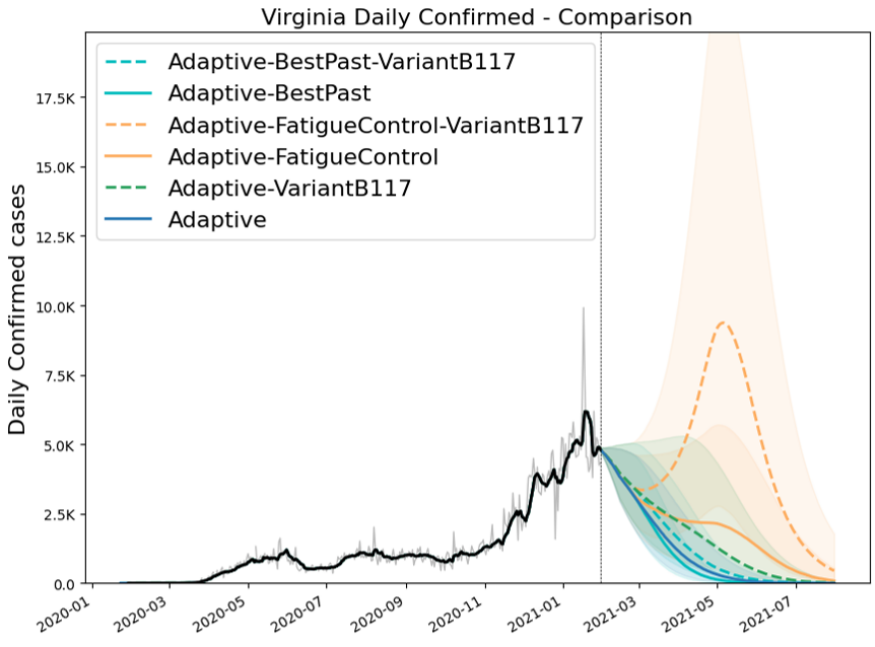
COVID-19 is a novel virus causing an unprecedented global pandemic and response. The model improves as we learn more about it.

THE PROJECTIONS

The UVA team continues to improve the model weekly. The UVA model uses an "adaptive fitting" methodology, where the model traces past and current trends and uses that information to predict future cases at the local level. This week, the model incorporates preliminary projections on the impact of vaccines. Projections incorporating vaccines will improve over time. Several scenarios are included, including counterfactual "no vaccine" scenarios. The model also includes three "what-if" or planning scenarios. The "Best Past Control" scenario projects what may occur if localities match the lowest rates of transmission seen earlier in the summer. This scenario also includes an optimistic vaccine rollout scenario, meeting public targets. The "Fatigued Control" scenario does the opposite, projecting the highest transmission rates forward and using a pessimistic vaccine rollout scenario. The "New Variants" scenario projects the potential impact of new variants, including a 50% increase in transmission, with new variants gradually becoming dominant in two months.

MODEL RESULTS

Overall, model results are encouraging. The adaptive model, and just about all other scenarios, show weekly cases already peaked at just over 69 average daily cases per 100K residents during the week ending January 24th. However, if Virginians suffer from pandemic fatigue as new variants take hold, the situation could be much worse. Under the Fatigued Control, Variant B.1.1.7 scenario, cases peak at 111 average daily cases. They also peak much later, during the week ending May 9th. To avoid high peaks or extending the pandemic, we must give vaccines time to have an impact, especially as new variants continue to be identified in the United States. **Do your part to stop the spread. Continue to practice good prevention and get vaccinated when eligible.**



THE G.O.A.T.

Tom Brady started his first professional football game for the New England Patriots on September 30th, 2001. He would go on to win six Super Bowls with the Patriots. Brady's career has been nothing short of remarkable but it has been a dark period for fans of divisional rivals, including this fan of the Buffalo Bills. When Brady signed with the Tampa Bay Buccaneers in March, it seemed to be the beginning of the end for his career.

Meanwhile, led by their own rising quarterback, the Buffalo Bills won their division for the first time in 25 years, with ambitions to win a world championship. However, when Super Bowl LV is played this Sunday, the Bills will be at home, watching Brady play for what could be his seventh Lombardi Trophy. Never count out the G.O.A.T.

Despite many thinking he was fading, Tom Brady will compete for his 7th Lombardi Trophy in Super Bowl LV on Sunday. Photo Credit: Brad Muckenthaler, licensed under CC BY 4.0

Finding a Way to Win

As noted above, the COVID-19 news has been encouraging for the past two weeks. Following a holiday surge that did not last as long as feared, cases are declining nationally. They have declined for two weeks in Virginia, with 29 of 35 Health Districts seeing a decline this week. After a rocky start, vaccinations are picking up. Over 7 percent of Virginians have received one or more vaccine doses.

Nevertheless, this is no time to get complacent. As pandemics go, it may not be the Greatest Of All Time, but like Tom Brady, COVID-19 seems intent on finding a way to win. Researchers continue to identify new Variants of Concern (VoCs). Despite limited sequencing capabilities over 600 cases of three VoCs have been identified in 33 states. Four cases of the B.1.1.7 variant, first identified in the United Kingdom, have been identified in Virginia so far, including three in the Northern Region. Additionally, Maryland has identified 15 cases: 12 B.1.1.7 cases and 3 B.1.1351 (first identified in South Africa) cases. While it may be a coincidence, the only Health District currently experiencing a surge, Loudoun, is also located in Virginia's Northern region.

Defense Wins Championships

The latest modeling runs demonstrate what good sports prognosticators have know all along: offense wins games, but defense wins championships. While vaccines will ultimately spell the end of the COVID-19 pandemic, it may be late summer before enough people are vaccinated to allow a return to normalcy. In the meantime, the modeling shows that maintaining or improving, prevention practices can successfully lower case rates. This is true even if VoCs become dominant. Since most VoCs increase transmission rates their impact relies on existing levels of transmission. If existing transmission rates are low, the impact of VoCs is limited. Additionally, fewer cases mean fewer opportunities for VoCs to develop.

However, if transmission rates are high, VoCs could have a large impact on the course of the pandemic. According to the Fatigued Control + Variant B.1.1.7 scenario, if Virginians relax prevention efforts as VoCs become dominant, average daily cases per 100,000 residents could double from current rates. Additionally, the pandemic could be extended. Under the Adaptive scenario, which shows the current course of the pandemic, case rates have already peaked, and are below earlier August peaks by early April. In the Fatigued Control + Variant B.1.1.7 scenario, cases peak in May and stay above August peaks through July.

COVID-19 Defense During Super Bowl LV

Like the holidays, the Super Bowl provides an opportunity to gather with friends and family. Despite declining case rates, these gatherings also pose a similar risk for COVID-19 spread. They also provide an opportunity for VoCs to spread. VDH and the CDC continue to discourage indoor gatherings, and has offered recommendations to enjoy the Super Bowl safely, including ways to host virtual or safe outdoor gatherings. We are each a part of the best defense against COVID-19. Do your part to stop the spread. And Go Chiefs!